

# NATIONAL RECORDER.

Containing Essays upon subjects connected with Political Economy, Science, Literature, &c.; Papers read before the Agricultural Society of Philadelphia; a Record of passing Events; Selections from Foreign Magazines, &c. &c.

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## Literature and Science.

From Tilloch's Philosophical Magazine.

### NOTE ON THE DIVINING ROD.

*By Dr. Charles Hutton.*

In the last No. (44) of the Quarterly Review, several small mistakes have accidentally crept into the short account relating to the alleged property of the divining rod, for the discovery of water, when used by certain persons. And as it must be desirable that every work should be as correct as possible, I communicate for your consideration the following particulars relating to the note in pp. 373 and 374, concerning some small inadvertencies that have occurred through forgetfulness, or by mistakes in reports passing through two or three different persons, as will appear by comparing the note with the full account in the 4th vol. of the new edition (an. 1814) of Dr. Charles Hutton's translation of Montucla's Philosophical Recreations, as given by the lady herself, whose name was then lady M. but is now lady N.

The note begins thus: "Jan. 21st, 1818: it is just 50 years since lady N.'s attention was first called to this subject; she was then 16 years of age." Which must therefore have been in the year 1768; whereas lady M.'s first letter to Dr. Hutton stated, that the transaction was in 1772 (if not 1773), when she was 19 years old. But these are only trifling discrepancies.

The remainder of the note differs not materially from the statement in lady M.'s letter in Dr. Hutton's book above mentioned, till we arrive at the paragraph in the middle of the 374th page, viz. "A few years afterwards she went, at Dr. Hutton's particular request, to see him at Woolwich (Common), and she then showed him the experiment, and discovered a spring in a field which he had lately bought near the New College, then building. This same field he has since sold to the college, and for a larger price in consequence of the spring."

Now, sir, this paragraph consists of a

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mass of inaccuracies. The fact is, that Dr. H. having about 15 or 16 years before purchased the field alluded to, bounded close upon the east side of Woolwich Common, and being convenient for erecting dwelling houses, he immediately commenced a series of operations of that kind, and in the first year (1790) built the first house, which he occupied with his family during several years afterwards. This house has now been used for the last 14 years as the hospital of the military academy or college, and goes by the name of the Cube House; standing on a square of 40 feet each side, and the same in height. During the building of this house, as it had always been reported and understood that no water was to be found on the neighbouring common, for his satisfaction Dr. H. procured a set of iron boring rods, with which he bored the ground to the depth of 50 feet, where he found a copious spring of water, and then dug his first well, 16 years before lady M. did him the honour of her visit.

From that time Dr. H. continued similar operations, till, in the course of 15 years, he had erected almost 20 new and genteel houses, part of them of four stories, and the others of five stories high, and had sunk wells to them, of the same depth as the first; having taken down about half a score cottages of two stories high, which had before been on the estate, to make room for his new buildings.

About this time the board of ordnance had in contemplation to erect somewhere a new college, the old one in the Warren (now called the arsenal) being found too small, and the situation too confined: various situations were examined for that purpose; but on account of Dr. H.'s new residence, and of his having discovered plenty of water, his situation was preferred: accordingly the whole of Woolwich Common was purchased from the parish, and the new college was placed very near the first or cubical house built by Dr. H.

After the new college was completed, the king came down to view it, having a good taste in architecture, having indeed

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himself made choice of the drawings for the front of it, being in the handsome Gothic style. It happened that when standing before the building, and looking down towards the beautiful military barracks, at the lower or opposite end of the common, he perceived that some new buildings partly intercepted the view of the barracks. His majesty immediately remarked the impropriety, and said that the obstructing buildings might be removed. He was then told that it was not in their power to remove them; that they were private freehold property, and belonged to Dr. H. the head master of the academy. "But," said his majesty, "they may be bought; let the whole be purchased, and the obstructing parts removed."

This was an order not to be neglected by the board of ordnance, and accordingly Dr. H. soon received a message from them, desiring him to transmit what price he demanded for his whole estate, houses and land. Dr. H. replied, that though he well knew they must have the property at any rate, yet he scorned to take any advantage of that circumstance, desiring not to have any thing beyond the bare and fair value of the estate; and agreeably to that resolution he requested the board to send down their own surveyor to set a value on the estate, and whatever that valuation might be, he would accept it. The board replied: There could be nothing more fair and liberal on his part. Accordingly, very soon after they sent down their own surveyor, Mr. Wyatt, for that purpose; who examined the property, both houses and land, said the buildings were very well executed, asked all the tenants what rent they paid: then adding all the rents together into one sum, multiplied it by 20: thus allowing 20 years purchase for the whole, both fields and land, which will certainly not be thought a high valuation. The surveyor reported to the board his estimate, with which they immediately acquainted Dr. H., who said he was quite satisfied; and the business was concluded, with thanks and compliments to Dr. H. for his liberal conduct. Immediately six of the largest obstructing houses were taken down.

After all this was done, and the estate conveyed and paid for, lady M. honoured Dr. H. with her visit; not to find him a spring of water, for that he had found himself long before, but to satisfy his curiosity as to the manner in which her ladyship performed the experiment, and which she certainly did, to the satisfaction of himself and fa-

mily, and of other friends who witnessed it.

See the whole of lady M.'s correspondence on the subject, in the fourth volume of Dr. H.'s Philosophical Recreations above referred to.

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FROM THE ANNALES DE CHIMIE ET DE PHYSIQUE.

*Memoir on the Conversion of Animal Matter into new Substances, by means of Sulphuric Acid. By M. H. Braconnot.*

Having in my former experiments discovered that wood, bark, straw, hemp, and every other kind of woody fibre might be converted, by the agency of sulphuric acid, into gum and sugar, I thought it expedient to extend my researches to animal substances. As many of these, such as skin, cellular membrane, cartilage, tendon, and tendinous sheath, are entirely dissolved by boiling water into *gelatine*, this substance was the first that occurred to me to examine.

*Action of Sulphuric Acid on Gelatine.*

Twelve grammes of glue reduced to powder were digested with a double weight of concentrated sulphuric acid without artificial heat. In twenty-four hours the liquid was not more coloured than if mere water had been employed. I then added a decilitre of water, and boiled the whole for five hours, renewing the water from time to time as it wasted. I next diluted it, saturated it with chalk, filtered, and evaporated to a syrupy consistence, and let it stand for about a month. In this period a number of granular crystals had separated, which adhered pretty strongly to the bottom of the vessel, and had a very decided saccharine taste. These crystals were collected by pouring off the supernatant syrup, then washed with weak spirit to dissolve out the adherent syrup, then pressed through a cloth, then redissolved in a little water and again crystallized, whereby they became tolerably pure. This sugar might in strictness form a new species of saccharine matter; its properties are the following:

*On the Sugar of Gelatine.*

This species crystallizes much more easily than cane sugar. If its solution is ever so little concentrated by heat, a crystallized pellicle forms without delay, which is speedily renewed when the former is broken down; but when the evaporation is



allowed to proceed slowly, we obtain very hard granular crystals, grating under the teeth like sugar candy, and in the form of flattened prisms or tabular groups. Its taste is nearly as saccharine as grape sugar; its solubility in water scarcely exceeds that of sugar of milk. This solution mixed with leaven gives no signs of fermentation. Boiling alcohol, even when diluted, has no action on this sugar. It is less fusible than cane sugar, and better resists decomposition in a raised temperature. By distillation, it gives a light white sublimate, and an ammoniacal product, which shows the presence of azote. This saccharine matter seems on the first view to have some analogy with sugar of milk; but the latter (as M. Vogel has observed,) is changed by sulphuric acid into a sugar very soluble in water and in alcohol; and besides, the sugar of gelatine, when treated by nitric acid, gives no mucous acid, but a new species of acid, which I have named the *nitro-saccharine*, and will be described in the following paragraph.

#### *Of the Nitro-Saccharine Acid.*

If nitric acid is poured on sugar of gelatine whilst still coloured, it does not appear to dissolve in the cold, but becomes very white, and the acid appears to take up the colouring matter: if this mixture is then heated, a solution takes place, but without the evolution of red nitrous vapour, and the effervescence that occurs when other animal and vegetable matters are heated with this acid. This nitrous solution being now evaporated (slowly towards the end,) gives a residue which congeals on cooling into a single crystalline mass. This, when pressed between paper and redissolved, yields the *nitro-saccharine acid* in purity. The quantity of this acid is much more than that of the saccharine acid from which it is obtained. It is very soluble, and crystallizes with the greatest ease in beautiful, colourless, transparent, flattened prisms, slightly striated like glauber's salt. Its acid and somewhat saccharine taste resembles that of the acid of tartar. When heated by itself, it puffs up considerably, melts indistinctly, and gives out a pungent vapour. It produces no change on earthy or metallic solutions. With potash, it forms a super-acid and a neutral salt, both of which crystallize in fine needles, and have a cooling nitrous taste, leaving an after flavour of sugar. When thrown on hot coals they detonate like saltpetre. The nitro-saccharine acid dissolves carbonate of lime with strong ef-

fervescence, and the liquor, gently evaporated, entirely passes into fine needled prismatic crystals, which do not deliquesce in the open air, are little soluble in concentrated alcohol, melt on hot coals, and then detonate. This acid forms with oxyd of copper a crystallizable salt, unchangeable in the air: with magnesia, a deliquescent, uncrystallizable salt, which puffs up excessively when heated, melts, and leaves a brown spongy residue resembling a vegetation. With oxyd of lead it gives a permanent gummy mass that will not crystallize: with iron and zinc it produces metallic salts, evolving hydrogen during solution.

These are the properties of some of the salts of this acid, which appears to be a compound of sugar and gelatine with nitric acid; and it is remarkable that this kind of sugar has its elements so intimately combined, as to resist the disorganizing power of nitric acid, which decomposes with evolution of nitrous gas the other vegetable compounds.

#### *Examination of the Syrup separated from the Sugar of Gelatine.*

This syrup, which was decidedly saccharine in its taste, still retained a quantity of the sugar above described, but mixed with a matter slightly azotic, and in part separable by tannin under the form of a reddish precipitate. The syrup, diluted with water, mixed with leaven, and kept a long time in a warm place, assumed neither the spirituous nor the putrid fermentation. When strongly heated it puffed up, and burned without the fetid smell that distinguishes animal matter, and left a coal of very easy incineration. Indeed the gelatine had lost much of its animal character, and approached more to the vegetable substances, slightly animalized: as no azotic gas was given out during the action of sulphuric acid on gelatine, I had reason to suppose that ammonia was formed, and accordingly this alkali was evolved on rubbing the syrup with potash.

This syrup is but little acted on by alcohol; but when the spirit is diluted and boiling, it dissolves a portion of the syrup, and on cooling deposits a sediment, consisting of sugar and a peculiar white matter, which will be presently examined. The spirituous solution gave by evaporation a syrup with a decided odour of honey, and some tendency to crystallize.

The greater part of the syrup, which was the portion insoluble in weak alcohol, still retained a saccharine taste mingled

with that of animal jelly. I could not succeed in precipitating all the animal matter by tannin.

*Action of Sulphuric Acid on Muscular Fibre.*

Some lean beef pulled into small pieces was soaked in a large quantity of water, which was frequently renewed to separate all the soluble matter, and then strongly and gradually pressed between folds of cloth. Thirty grammes of the beef fibre, thus prepared, were mixed with as much sulphuric acid, in which they softened and dissolved without changing the colour of the acid, or disengagement of sulphurous acid. The solution was then heated to promote the solution of some remaining particles, and cooled to allow of the separation of a layer of fat which rose to the surface, though the precaution had been taken to choose a very lean piece of meat. The solution was then diluted with about a decilitre of water, and boiled for nine hours, renewing the water from time to time; then saturated with chalk and evaporated, and it yielded an extract not sensibly saccharine, but which had such a decided taste of osmazome, that it appeared to me fit to be used in preparing soup. This extract rubbed with potash disengaged ammonia. In the fire it swelled and burnt, leaving a coal easy to incinerate. The solution of the extract did not putrefy in a gentle and long continued heat. Some of the extract was boiled at several intervals with alcohol of 34° (Beaumé), the different portions of spirit were mixed together, and deposited, on cooling, about a gramme of a peculiar white matter, which for the present I shall term *leucine*.

*Of Leucine.*

This substance when dry was white and pulverulent, but it still retained a little animal matter, precipitable by adding tannin with precaution to the solution. After some hours standing, I filtered the liquor, which passed colourless. I then evaporated it till a pellicle formed on the surface; under which, after twenty-four hours standing, one could distinguish small mammillated crystals somewhat crisp in the mouth, and of a dead white, lining the bottom of the dish. If on the other hand the solution of leucine in tepid water is left to spontaneous evaporation, there forms on the surface a multitude of small, detached, flattened, circular crystals, exactly resembling button moulds, with an inverted edge on their circumference, and a depression

in their centre. Leucine has an agreeable taste of gravy or broth. It is lighter than water, swimming on its surface. When heated in a small glass retort it melts, but at a much higher temperature than boiling water, gives out a smell of boiled meat, and partly sublimes in small, granular, opaque-white crystals: the remainder, which is liquid, contains empyreumatic oil, and renders blue the reddened colour of litmus.

The solution of this sublimate in water is not troubled by subacetite of lead, nor any other of the usual metallic tests, except nitrate of mercury, which entirely separates it from its solvent, in the form of a white flocculent precipitate, the supernatant liquid assuming a rose colour.

Leucine dissolves readily in nitric acid. If this solution is heated to expel the greater part of the acid, a very slight effervescence is perceptible, but no production of red nitrous vapour; and the remaining solution, after gentle evaporation, congeals into a crystalline mass, which, after pressure between filtering paper and re-solution in water, crystallizes into thin, divergent, colourless needles. This forms a peculiar acid, analogous to the nitro-saccharine above described.

This *nitro-leucic acid* forms peculiar salts with the several bases. With lime it produces a permanent salt crystallized in rounded groups. With magnesia the salt formed appears as small granular crystals, which do not deliquesce in the air, in which respect it differs from the nitro-saccharate of magnesia.

*Examination of the Alcoholic Liquid from which the Leucine had precipitated.*

This solution still retained a quantity of leucine. On evaporation it left a thick granulated residue, out of which cold alcohol dissolved a reddish extractive matter, leaving the leucine untouched. This extract is slightly deliquescent, and has rather a bitterish taste of burnt roast meat. It was not changed by sulphuric acid; its solution in water was hardly troubled by subacetite of lead and infusion of galls, and not altered by sulphate of iron.

*Of the Substance insoluble in Alcohol.*

The extractive matter arising from the muscular fibre treated with sulphuric acid was only partially soluble in alcohol, as before described; the portion insoluble in this reagent was the most abundant. I dissolved it a second time in water, to separate the sulphate of lime with which it was mixed, and obtained by evaporation a yel-



lowish brown extractive matter, slightly deliquescent, and having a taste of broth, probably owing to the leucine which it still retained. In the fire it swelled and burnt like matter moderately animalized, and left a coal easy to incinerate. The solution of this extract in water gave a reddish precipitate with infusion of galls, which was loose and flocculent, like that which arises from matter little animalized. Persulphate of iron gave a copious reddish flocculent precipitate; nitrate of silver, a grey precipitate; nitrate of mercury, a white coagulum. As the subacetite of lead gives also a copious white precipitate with this extract, and does not disturb the solution of leucine, I hoped to be able by this means to separate the two; and in consequence added this reagent, and obtained the white precipitate, and from the filtered liquor I first separated the lead which it retained by carbonate of ammonia, and evaporated the syrupy residue; but I procured very little leucine by this process.

#### *Action of Sulphuric Acid on Wool.*

Fifteen grammes of white woollen cloth, cut into small shreds, were moistened with sixty grammes of sulphuric acid, lowered with a quarter of its weight of water. A little sulphurous acid gas was given out, and the wool became reddish, but without perceptibly softening; the mixture was then exposed to a water-boiling heat, on a sand bath, and with shaking it was changed to an uniform mucilage. The digestion was continued till a complete solution was effected, and the whole became a red liquid, and ceased to give out sulphurous acid: it then deposited a sediment, which, on further examination, was easily burnt to ashes, and proved to be sulphate of lime, with a fat bituminous matter, an animal substance, and a very little siliceous matter.

The acid solution, diluted with water, was boiled for nine hours, then was saturated with chalk, and evaporated to the consistence of an extract, which was yellowish, and had a taste like the extractive matter of broth, giving the same appearances when burnt, and yielding ammonia by trituration with potash.

This extract was treated with weak boiling alcohol, in successive portions, which dissolved out of it a small quantity of leucine, and a substance a little animalized. As to the portion insoluble in this weak spirit, which was the most considerable, it had the same taste of broth, and all the other properties which were found in the analogous substance produced from fibrine.

Wishing to know in what state the wool existed immediately after its conversion into mucilage, I moistened eight grammes of it with sixteen grammes of sulphuric acid, diluted with four grammes of water; and after some minutes digestion in a boiling-water heat, and subsequent shaking, there resulted a thick red mucilage, which totally dissolved in water, except a little whitish matter, which was only a portion of the wool, but little changed. The acid liquid was saturated with chalk, and gave by evaporation a substance having exactly the appearance of common glue, but with little cohesion, not deliquescent, and easily reducible to powder. Its taste was disagreeable. In the fire it puffed up and burnt with a smell like scorched wool, but less fetid, but without giving out any sulphurous acid: the coal burnt to ashes as easily as vegetable coal. This substance gave out ammonia rubbed with potash. Infusion of galls poured into the solution of this substance decomposes it entirely: the precipitate is white, flocculent, and does not collect into an elastic cohesive mass like that which forms in the solution of gelatine. Acetite of lead hardly troubles it; but on adding nitric acid there forms a small insoluble deposit of sulphate of lead. Nitrate of mercury and subacetite of lead produce copious white precipitates. Persulphate of iron acts on this as it does on solution of gelatine, it coagulates it entirely into an orange-red mass. Boiling alcohol hardly touches it.

It appears, therefore, that the principal facts contained in this memoir are the following:

1. That animal substances may be changed by the action of sulphuric acid into substances containing a much less proportion of azote.
2. That this change is brought about by a subtraction of hydrogen and azote, in the proportions necessary to form ammonia; and probably by an absorption of oxygen from the sulphuric acid.
3. That gelatine may be converted in this way into a species of sugar, *sui generis*, which does not appear to exist any where naturally.
4. That this sugar combines intimately with nitric acid, without sensibly decomposing it, even with the assistance of heat, and there results a peculiar crystallized acid, to which I have given the name of *nitro-saccharine*.
5. That wool, and especially fibrine, when treated with sulphuric acid, yield a

peculiar white matter, which I have denominated *leucine*.

6. That this matter, heated with nitric acid, does not sensibly decompose it, and produces a crystallizable *nitro-leucic* acid.

7. Lastly, That other uncrystallizable and sapid substances, analogous to certain vegetable principles, are also produced by the action of sulphuric acid on the most insoluble of the animal principles.

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*Test for Wheat Flour.*—D. Tadei, in the course of various researches respecting the fermentation of grain, has ascertained that the gluten of wheat is composed of two substances perfectly distinct from each other, one of which he has named *gliodine*, and the other *zimome*. The first of these gives to gluten its elasticity, and the second is the cause of the fermentation which takes place on the mixture of gluten with other vegetable substances.

Having had occasion to mix various gums with different kinds of flour, D. Tadei observed, that when the powder of guaiacum is mixed with flour, a blue tint is produced. When kneaded with any meal or flour containing but little gluten, the blue colour is very feeble: it acquires no blue tint with flour that has been much altered in its qualities: with gluten or zimome a very fine blue tint is instantly produced. Guaiacum, it is inferred, may therefore be employed as a test to detect adulteration of flour.—*Giornale di Fisica, Chémica, &c.* 1819.

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The French government is now preparing a voyage to Lapland. It is to proceed beyond the North Cape, into the Frozen Ocean, and it is expected to terminate about the end of September this year.

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*New Voyage of Discovery in the North.* Letters from St. Petersburg, dated March, state that a new voyage of discovery will be undertaken this summer in the north. The expedition will sail from the mouth of the Lena, for the Frozen Ocean, in order to examine the coast of Siberia, and the islands which were discovered to the north of it some years ago. As it is not yet ascertained whether these supposed islands may not be one main land or not; and as hitherto they have only been visited in winter, it will be interesting to know how far the ice will permit vessels to advance

during summer, and to determine its extent. [*Repertory of Arts.*]

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T. Edward Bowdich, esq. conductor of the mission to Ashantee, has published a "Prospectus of an Expedition into Africa." He invites the "institutions and individuals of Europe in general, by subscribing for shares of £5 each, to make this great object immediately practicable. He devotes his services, he risks his life for the success." The necessary expenses he estimates at £700. He "does not promise a dazzling and precipitous rush to the Niger, to Timbuctoo, a glance over men and nature *en passant*, but he promises to advance to both, to procure solid advantages, and to make a firm progress in the interior, which may conduct us or our descendants throughout it.

The harmless simple enterprises originated by individuals, admit of no offence to the laws of nature, or to the laws of nations, but peaceably benefit both science and humanity; witness the illustrious exertions of the African Association of England. It is desirable that the emissaries of such societies, should precede the self interested trader, or the daring adventurer, to establish the benevolent character of Europeans in the hearts of the Africans by first impressions."

He will "never accept any salary or remuneration from the funds collected. He will never accept recompence from individuals, or from any other than my own government. For his zeal, he refers to the mission to Ashantee; for his qualifications, to the members of the institute who have assisted his studies in Europe," and thus concludes:

"I pledge myself as the zealous servant of science and literature, to collect, orally and in MS. every thing that can enlarge and illustrate our knowledge of the geography, the history, the superstitions, and the customs, of the interior of Africa. I pledge myself to collect zoological, mineralogical, and botanical specimens, for every institution of Europe which may desire them. I pledge myself not merely to multiply the observations of astronomy and physical science, which my own studies and the experience of my instructions have suggested to me, but I promise gratefully to receive and zealously to execute, the suggestions of every man of science, the commands of every society, to prove myself, as long as such a climate may spare my life, the devoted and laborious envoy of Europe, and



the firm and compassionating friend of Africa.

I am the first to subscribe to the enterprise, and I will be the last to abandon it.

T. EDWARD BOWDICH,

Conductor of the Mission to Ashantee.

T. E. Bowdich, esq.—one share . . . £5.

*Amber.*—Dr. Brewster maintains, from a number of experiments and their results, that amber is an indurated vegetable juice.

FROM THE NATIONAL GAZETTE.

Messrs. Editors—In a late excursion I made to Cape May, I found the subjoined notices marked on the wall of the house in which I lodged, respecting the encroachment of the sea on the land, in that place, during a period of sixteen years. This, however, is but a small part of what the fury of Neptune has there accomplished; for I was informed by an old pilot, that thirty years ago, he had drank water from wells, then standing on the bank, which now are situate far beyond the breakers—and that orchards had existed on the spot now forming the beach.

If you think this worthy of notice, it is much at your service. The house adverted to, is occupied by Dr. Whale, and has an exposure to the ocean, nearly I believe N. N. E. Yours, respectfully, CIVIS.

August 17, 1820.

1804 . . . . 334 ft. to sea bank.

1806 . . . . 324

1807 . . . . 294

1808 . . . . 273

1809 . . . . 267

1811 . . . . 259

1812 . . . . 254

1816 . . . . 225

1817 . . . . 214

1818 . . . . 204

1819 . . . . 188

June 22, 1820 . . . . 180

Lost in 16 years, 154 feet—or about nine and a half feet annually, supposing it uniform, which, however, from the above table, does not appear to be the case.

*Literature in New South Wales.*—At Sydney, in New South Wales, there are at present three public journals, and five other periodical publications. A second printing press has also been established at Port Jackson. They now export cattle to the Isle of France, and the market at Sydney is considered as plentiful in the

different commodities of Europe, as well as of India and China.

FROM THE NEW YORK STATESMAN.

*Extract of a Letter, dated Canandaigua, July, 1820.*

I saw for the first time in the Seneca river at Montezuma, the aquatic plant called wild rice or folle arvine. It grows all over the west and north; and wherever it flourishes myriads of water fowls are attracted to it, and derive their chief support and exquisite flavour from its alimentary qualities. In the lakes and rivers adjoining Montezuma, thousands of wild geese and ducks of all kinds congregate at the proper season for food, except the canvas back duck or anas valsineria of Wilson, which derives its name from a water plant called valsineria, on the roots of which it feeds, and which Wilson states to be a fresh water vegetable, that grows in some parts of the Hudson and Delaware, and in most of the rivers that fall into the Chesapeake.

Some difficulty has occurred not only about the botanical name, but also about the botanical character of the wild rice, or wild oats. The confusion of nomenclature has arisen from Linnæus himself. In his Species Plantarum, he has denominated it zezania aquatica, and in his Mantissa, zezania palustris—and it has been called by other botanists, zezania claurlosa. I shall prefer the first name as most characteristic. It has been well described by Mr. Lambert, as zezania panicula inferne racemosa superne spicata. Pursh represents it as a perennial plant. Nuttall and Michaux are silent on this point, and Eaton says it is an annual, in which opinion I concur.

Mr. Lambert, in a communication in the 7th volume of the Transactions of the Linnæan Society of London, has given a figure of this plant as growing at Spring Grove, the seat of sir Joseph Banks, in England. It appears that sir Joseph received some of the seed gathered in a lake, in Canada, and put up in jars of water. It was sown in a pond at Spring Grove, where he has a great quantity of the plant, growing annually, ripening its seeds extremely well in autumn, and sowing itself round the edges.

By what I can learn, this same plant grows in Lake George, and Lake Champlain, and in all the western lakes. It produces seed in some places in September, and in others in October. It grows in shallow water, and sometimes to the height of eight feet. Some of the western Indians derive their principal support from it. The grain it bears is superior to the common rice, and if cut before ripe, it makes excellent fodder, embracing the advantages of hay and oats. Mr. Lambert's figure of the plant in the Linnæan Transactions is accurate, and exactly resembles the one growing in the Seneca river. Its productiveness may be inferred from the food it furnishes to thousands of human beings, and to myriads of aquatic animals. From the success of the experiment of sir Joseph Banks, it is highly probable that it will grow in any part of this country and Great Britain; and if so, may it not be considered as a good substitute for the oryza sativa or common rice. It is well known that the latter furnishes more subsistence to the human race than any other plant. Pursh mentions

a grass which he calls the *oryzopsis asperifolia*, which he observed on the broad mountains of this country, and which he says contains large seeds, that produce the finest flour. Perhaps this species of *oryzopsis*, although generally different, bears the same relation to *z. aquatica* in its importance and place of growth, as the mountain rice of India does to the common rice of that region. At all events, the more I see of this country, the more I am convinced of its vast ability to support the human species, and of the propriety of calling its latent powers into operation.

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The following is extracted from a late English paper:

#### NEW MECHANICAL INVENTIONS.

From the great efforts which have been made, for many ages past, to bring the two following most important machines to perfection, it might have been reasonably concluded that it was fruitless for any one to attempt further improvements in them; but the scientific reader will learn with satisfaction, that from the successful result of the mechanical skill of Mr. George Clymer, an American gentleman, lately arrived from Philadelphia, it is evident there was much room left for improvement; and we have no doubt but the *first* will prove to be the means of prolonging, and the *second* of saving, the lives of numerous human beings.

The "*Columbian Printing Press*" is, in its appearance, truly handsome, and in its properties far surpasses any other printing press now in use. We have perused a variety of testimonials, from printers of the highest respectability, which clearly prove its superiority; and, although we have had but a short trial of its merits, we cannot withhold our corroborating sentiments respecting it. This press is remarkable for the simplicity of its construction; the ease of labour which it administers to the workmen, hitherto so excessively laborious at all other presses, particularly in working off large forms; the amazing power and simple method of regulating that power, to work the heaviest or the lightest forms, by the *only true* and *infallible* mode of effecting the finest typographic specimens between two flat surfaces, technically termed the table and platin—all tend to prove it the acme of perfection in that branch of mechanism.

The "*Columbian Ship's Pump and Extinguishing Engine*" is an hydraulic machine which strikes us with profound astonishment. We have visited Mr. Clymer, at his manufactory, No. 1, Finsbury street, near Finsbury square, for the express purpose of seeing this engine in operation. Its appearance is truly *nouvelle*, and, as a ship's pump, it raises and discharges, with perfect ease, from 250 to 300 gallons of water per minute; and, together with the water, it raises and disgorges *all* substances which do not exceed the diameter of 18 and 20lb. shots. We have seen this engine raise and discharge 18 and 24lb. shots in rapid succession, which sufficiently proves the impossibility of choking or retarding it in its operations.

All other ship's pumps are liable to become choked, and thus rendered useless, by ballast or other substances unavoidably mixing with the

water; but this extraordinary engine bids defiance to *any* substances impeding its operations, or putting it out of working order; and being composed almost of one solid mass of metal, and remarkably simple in its construction, any person possessing common understanding can always keep it in order. As a *fire engine*, to which it may be converted in a few seconds, it possesses powers very far beyond any engine now in use, and may be worked with considerably less labour.

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Mr. Barlow, one of the mathematical professors in the Royal Military Academy, has discovered that the magnetic quality of iron resides wholly in the surface, so that an iron shell, weighing only 3 lbs. 4 oz. will act as powerfully on the needle, as a solid ball of the same dimensions, weighing upwards of 300 lbs.

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#### Extract of a Letter from Caleb Atwater, esq. to the Editors.

"I discovered a considerable bed of alum in stone in a bank of Jonathan's creek, about seven miles west of Zanesville, and immediately beside the great road. Salt, in almost any quantity, may be manufactured near Zanesville. The water is easily raised, and not very deep; its strength is equal to any in the western country. Iron ore abounds in the vicinity: fossil coal is quite abundant not far from the town: clay, fit for pipes and queensware, is also here. The people are industrious and enterprising, and the place bids fair to become a great manufacturing town."

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#### ALTITUDE OF KEARSARGE MOUNTAIN.

On Wednesday the 2d ult. a party, consisting of captain Alden Partridge, of Norwich, Vt. lieutenant John Wright, late of the United States corps of engineers, and assistant professor of mathematics at West Point, cadets Hopson and Buswell, of the military academy, Messrs. Curtis and Flint, juniors in Dartmouth College, and master Charles, son of Mills Olcott, esq. of Hanover, were joined at the foot of the mountain by Moses Eastman, James I. Wells, and Joshua Fifield, esquires, of Salisbury, together with two or three other gentlemen, and proceeded to the summit, where

———"Nature seem'd to sit alone,  
Majestic on the craggy throne."

The ascent is easy, though steep, from the north, the most practicable route. The prospect of the surrounding country from the top of this mountain is picturesque and very extensive in a clear atmosphere, and at sunrise, when no clouds obscure, the dim Atlantic may be seen just verging the ho-



riзон. The course of the river Merrimack may be traced for many miles, by the vapour hovering over its waters; and a countless number of small streams, ponds, &c. diversify the landscape.

We have tarried on the mountain over night, and enjoyed one of the most beautiful of its scenes. The cloudless glory of the moon, and the increased radiance of the starry host, rendered the prospect, if possible, more delightful, though less extensive, than in the day time.

The mountain itself, for some distance down its sides, has become bare from effects of fires; but from its base upwards to its centre, it is covered with a heavy growth of timber. Midway up, mulberries, whortleberries, &c. are found in abundance, and refresh the traveller when weary and faint.

Capt. Partridge has obligingly favoured us with the altitudes, as ascertained by him from observations at several points, viz.

Altitude of the mountain above tide water, 2461 feet.

Do. above Foster's tavern on the turnpike at the foot of the mountain, 2279.

Do. above the old farm house on Morey's hill, 1263.

The elevation of the mountain above tide water was ascertained by determining its elevation above the residence of captain P. at Norwich, the altitude of which above the sea he has determined by a mean of more than three thousand observations.

This scientific gentleman has visited all the principal mountains of the north, and we hope ere long to be able to present our readers with a table of their altitudes, and a description of the scenery around them.

[*New Hamp. Patriot.*]

### Literary Notices, Colleges, &c.

The Rev. Daniel Dana, D. D. of Newburyport, has been unanimously elected president of Dartmouth College.

*Middlebury College.*—At the annual commencement of this literary institution, which took place on the 16th inst, twenty-two young gentlemen were admitted to the degree of bachelor of arts.

Twelve gentlemen, alumni of this college, were admitted to the degree of master of arts, and Robert B. Patton, alumnus of Yale, and professor of languages in this college, was admitted *ad eundem*.

At the late anniversary commencement at Allegheny College, (Penn.) the honorary degree of A. M. was conferred on the Hon. Daniel Conney; and that of M. D. on Elias Weld, of Maine.

At the commencement in Dartmouth College on Wednesday last, twenty-four candidates were admitted to the first degree. The degree of

doctor in divinity was conferred on the Rev. Samuel Wood, of Boscawen.

The number of students of the several classes of Harvard University, according to the last printed catalogue, is as follows; Theological students, 38—law students, 11—resident medical students, 4—students attending medical lectures, 58—seniors, 56—juniors, 63—sophomores, 72—freshmen, 81. Total 383.

*Oxford and Cambridge Universities.*—It appears by a summary of the members of Oxford and Cambridge, in their calendar of 1819 and 1820, that the following is the number:

OXFORD.			
1819	Members of convocation	. .	1874
	on the books	. .	3984
1820	of convocation	. .	1873
	on the books	. .	4102
CAMBRIDGE.			
1819	Members of the Senate	. .	1495
	on the boards	. .	3698
1820	of the Senate	. .	1558
	on the boards	. .	3395

### Record.

#### REVOLUTION IN NAPLES.

It appears that a complete revolution has been effected in the kingdom of Naples, without bloodshed, and that a constitutional government, similar to that of Spain, was immediately to be adopted. On the sixth of July the king issued the following decree:

"The general wish of the Kingdom of the Two Sicilies for a constitutional government having manifested itself, we consent to this, of our full and entire will, and promise to publish the basis in the space of eight days.

"Till the publication of the constitution, the existing laws shall continue to be in vigour.

"Having thus satisfied the public wish, we order the troops to return to their corps, and every individual to his ordinary occupation.

(Signed)

"FERDINAND."

*Naples, July 6.*

On the same day the king abdicated the throne to his son Francis, who the next day issued the following proclamation:

"By virtue of the act dated yesterday, by which his majesty, our august father, has transmitted to us, with the unlimited clause of the Alter Ego, the exercise of all rights, prerogatives, pre-eminence and faculties, in the same manner as they can be exercised by his majesty.

"In consequence of the decision of his majesty to give a constitution to the state;

"Wishing to manifest our sentiments to all his subjects, and to second at the same time their unanimous wish;

"We have resolved to decree, and do decree as follows:

"Art. 1. The constitution of the Kingdom of the Two Sicilies shall be the same that was

adopted for the kingdom of Spain in 1812, and sanctioned by his Catholic Majesty in March, 1820, saving the modifications which the national representation constitutionally convoked, shall consider it suitable to propose, in order to adapt it to the particular circumstances of the states of his majesty.

"2. We reserve to ourselves to adopt and make known all the arrangements which may be necessary to facilitate and accelerate the execution of the present decree.

"3. All our ministers secretaries of state are charged with the execution of the present decree.

"Naples, 7th July, 1820.

(Signed) "FRANCIS, Lieut. Gen."

#### AFRICAN INTELLIGENCER.

The publication of a monthly journal, of this title, has been commenced in this city, under the superintendence of Mr. J. Ashmun. It is intended to be an auxiliary in forwarding the progress of the plan for restoring the free black population of our states to the country of their ancestry; and is entitled to the support of all who feel an interest in this object, or are willing to receive information on it. The prospectus gives the following view of the plan of this work:

"The contents of the *Intelligencer*, by a natural distribution, will be arranged under three distinct heads.

"The first, of *general intelligence*, will embrace such notices of Africa, and its inhabitants, including the geography, natural history, and productions of the former, the physical and moral character, history, and present condition of the latter, as will present to readers a distinct and extensive view of the great objects to which the exercise of African philanthropy may be most profitably directed.

"The second division will be devoted to articles explanatory of the history, nature, and consequences of the *slave trade*, and the means employed for suppressing it; with a journal of the current operations, of our own and European governments, to effect its entire annihilation.

"The third division of the journal will be occupied exclusively in recording and detailing the history, proceedings, and correspondence of the *American Colonization Society*, at home and abroad."

The price of the work, stitched in monthly numbers, and delivered to subscribers, is two dollars and fifty cents per annum. [*Nat. Int.*]

The Tennessee legislature have lately passed an act, which in effect, we think, makes paper money a legal tender: it will at least have this effect on small debts. The following was an excellent hint to the legislators who have disregarded the loudest warnings of experience.

*Tennessee Legislature, July 25.*

The speaker announced to the House that he had received per mail, a letter, which was handed to the clerk, who read the address as follows. "The honourable Robert Weakly, or the honourable James Fentress, or his excellency, Joseph M'Minn, esq. governor and commander in and over the army and navy of the state of Ten-

nessee, or in their absence Felix Grundy, esq. Murfreesborough." The letter being opened it was found to cover a twenty shilling bill, of the Bank of James River, dated the first of September, 1776—the envelope was entirely blank. Mr. Grundy inquired whence the letter came, and being answered it was post marked Dandridge, July 20th, 1820—moved that the bill be delivered to the member from Jefferson, with a view that the money might be returned to the owner, if he could be found.

Mr. Bradford replied that his people stood in no need of such money, and hoped the gentleman from Davidson, might be permitted to take and apply it to the relief of his people—a general laugh—The letter and *twenty shilling* bill, laid on the table without order.

#### DIED,

At West Point, on the 28th ultimo, ANDREW ELLICOTT, professor of mathematics at the Military Academy, aged 67. He was one of the few men of our country, who, at the period of his youth, had made any considerable advances in the mathematical sciences. These he continued to admire and cultivate during life; but to no particular branch was he so much devoted, as to practical astronomy. In this, he was pre-eminent, both in the expert use of instruments, and the accuracy of his calculations, which were the results of his observations. The reputation which he gained for those rare, and peculiar acquirements, was evinced by the number and frequency of his appointments, both by individual states, and the United States, for the purpose of adjusting such boundary lines as depended on the most nice astronomical observations. While engaged in these, he did not fail to improve the advantages which his travels presented, of adding to the general stock of natural knowledge. The geography of our country, in particular, is indebted to him for many interesting details, and descriptions of its unfrequented parts, as well as for the most accurate adjustment of the relative situation of particular places. By his death, science is deprived of a devoted admirer—the Military Academy of one of its best friends and most distinguished professors—society of a benevolent and useful member, and his family of a tender husband, and a kind and affectionate parent.

#### HOUSE OF REFORM.

A plan has been set on foot in the county of Lancashire, England, for establishing a House of Reform for discharged criminals. The earl of Derby is the patron of the institution, and the duke of Hamilton the president. The former gentleman has opened the books with a subscription of two hundred, and the latter one hundred pounds.

The design of the institution is, in the words of the prospectus, "To provide a temporary asylum for persons of both sexes, liberated from penal confinement in the several jails and houses of correction, belonging to the county palatine of Lancashire; to furnish them with the means of religious instruction; to habituate them to a system of moral and Christian restraint; to employ them in various trades of profitable la-



bour, qualifying them, during their residence in the Refuge, for the future exercise of some honest, industrious, and reputable calling; by mild restraints and reasonable motives to reform the character to the voluntary exercise of self government, and to habits of practical virtue; and when at length such progress in amendment is made, as to justify a readmission to free intercourse with society, then to furnish recommendations, (which it is hoped the merciful part of mankind may receive) or to secure for them, by other means, such situations in life as may be suited to their conditions and acquirements."

No stronger proof need be given of the pressing call for such an institution, than the annexed statement. The following is the return of prisoners confined for trial in the Liverpool county jail, in the years 1816, 1817, and 1818, respectively:

1816	{ Males, 482 }	Total 672
	{ Females, 190 }	
1817	{ Males, 583 }	Total 718
	{ Females, 135 }	
1818	{ Males, 991 }	Total 1218
	{ Females, 227 }	

Again, to prove within the same period the enormous increase of juvenile depravity—in the Manchester House of Correction, the boys from 8 to 18 are returned as follows:

1816	- - - -	61
1817	- - - -	119
1819	- - - -	181

In three years the number of boy delinquents has been very nearly tripled.

### Miscellany.

#### "Money makes the Mare go."

This is an old proverb, but in what sense is it true? It is not *literally* so: nobody believes that money itself drives the mare, but that the owner of the mare will drive quickly when he hopes to gain money by so doing. And what does he want with the money, but to buy therewith food and raiment and shelter and every comfort and luxury that he can afford? We might then say with equal truth, that bread and butter, or a pair of breeches, or a gold watch, or a wife and children, will make the mare go. Obvious as this may appear, it is overlooked by many sensible people.

The editor of the Richmond Enquirer states as his opinion, that "the reduction in the quantity of our circulating medium is a principal source" of our distresses. If this be true, the mode of relief is very plain. Let a tax to the amount of fifty millions of dollars be imposed by Congress, and made payable in goods suited to foreign markets, which goods shall be rated at prices at which they will sell abroad. Let them be sold for gold and silver, and let the gold and silver be brought home; none

must be expended in buying any thing for sale here, though ever so great a profit might be made of it, and though we may want the foreign articles very much; for, according to the supposition, there is a greater demand for money than for any thing else, though our merchants are ignorant of it. When the precious metals have reached home, send them to the Mint to be made into "circulating medium," and then let those who have receipts for the tax by which the money was procured, come forward and receive the amount of them in coin. Does the editor of the Richmond Enquirer think this would make business much better?

We generally agree with his opinions as to what is proper to be done or left undone in these matters, but not so often with the reasons on which they are founded.

### RESTRICTIONS ON COMMERCE.

After a most distressing description of the misery of the poorer classes in Great Britain, the Edinburgh Review (No. 66) proceeds to state that if "government be really desirous of restoring prosperity and tranquillity to the country, and of saving the great bulk of the people of Britain from all risk of being permanently reduced to the same hopeless and desperate condition as their brethren in Ireland, they must lose no time in adopting a different system from that on which they have hitherto acted."

The assessments for the support of the poor have increased in the last fifteen years from *four* to *ten* or *twelve* millions, and yet the cry of relief is more loud and pressing than at any former period, and the reviewers see no other method of alleviating this distress, than by extending the foreign market, and this remedy they say, England has completely in her power. "The time is now come when we must either abandon this exclusive and unnatural system, or submit to be deprived of that widely extended commerce, which has hitherto afforded the means of subsistence to so large a proportion of our population, and been the main source of all our wealth and prosperity. The artificial protection which had at first been granted to a few branches of industry, has been urged as a valid reason by those engaged in other branches, why they should be placed in the same favoured situation. In this way, the restrictive and prohibitive system has at length interfered with the freedom of commerce in almost every department. We could fill half a dozen of pages with the mere names of commodities, whose importation is entirely prohibited; and as many more with the names of those, on which duties amounting in effect to a prohibition, and intended to act as such, have been imposed."

"If any thing besides the distress and misery of which it has already been so productive, were wanting, to induce us to abandon our prohibitory system, and to consent gradually to recur to the sound principle of a free trade, it would be found in the effect which it has had on the

policy of other nations. Instead of ascribing the commercial superiority of Great Britain to its true causes—to the comparative freedom of our constitution—the absence of all oppressive feudal privileges, and our perfect security of property, our foreign rivals have re-echoed the sentiments of ministers, and contend that it has resulted entirely from the protection granted to our merchants and manufacturers, and urge our example to stimulate their respective governments to secure them against the effects of British competition. Nor have these applications been without effect. In 1817, the American legislature passed an act, copied to the very letter from our famous navigation law, with the avowed intention of its operating as a retaliatory measure against this country; and they have just passed another act, prohibiting, under heavy penalties, all intercourse between the United States and the British West India islands, because, as one of their orators expressed it, 'Great Britain would not allow a cock boat, or any vessel belonging to an American subject, to enter her colonies.' Such are the natural fruits of restrictive regulations?"

"It would have been well, had the retaliatory measures of the Americans stopped here. But the orders in council and the non-intercourse act, having for several years nearly put a total stop to the intercourse between this country and the United States, a *manufacturing interest* grew up in the latter. Had the Americans acted wisely, they would have left this *new interest* to depend on its own resources. But, in humble imitation of 'the wisdom of their ancestors,' they immediately set about fostering and dandling the rickety bantling; and, to save it from the effect of foreign competition, increased the duties on imported cotton and woollen goods from 12½ to 25 per cent. This increase of duty, or, which is the same thing, this addition of 12½ per cent. to the price of all the cotton and woollen cloths made use of by the American people, not having been found sufficient to protect those rash and improvident speculators who had engaged in a branch of industry which they must have been certain could only exist by means of a monopoly, Congress have favourably entertained a proposal for making so very large an addition to the present duties as will go far to render them prohibitory! Now, we feel perfectly assured, that nothing but the example of Great Britain could ever have induced the American legislature to listen for one moment to so monstrous a proposal. The boundless extent of fertile and unappropriated land in that country, must, for ages to come, render the raising of raw produce the most profitable species of industry in which her citizens can possibly engage. And any attempt to encourage the premature growth of manufactures, by forcing the investment of a very large proportion of the capital of the country in a less productive employment, must occasion a proportionable diminution of the power to accumulate stock, and of the wealth and riches of the community."

The benefits of a free intercourse between England and France are held out in the most alluring manner, and free trade is advocated with a force of reason, that we would suppose certain of success, had we not so often seen that conviction depends on the will.

"This illiberal policy is disadvantageous in many other respects besides being fatal to our commerce. Our open and avowed jealousy of the commercial prosperity of other countries, and the power to which we have attained, excites at once their ill will and their envy; and disposes them as well to manifest an unaccommodating spirit on occasion of any petty quarrel, as to adopt retaliatory measures on our trade. This has been especially the case with France. But, if things were left to their natural course, the connexion between the two countries would be so intimate—the one would constitute so near, so advantageous, and so extensive a market for the produce of the other—that they could not remain long at war without occasioning the most extensively ruinous distress—distress which no government would be willing to inflict on its subjects, and to which, though it were willing, it is probable no people would be disposed to submit. By doing away all restrictions on the trade with France, the two nations would acquire one *common interest*. And we should thus not only cause a prodigiously increased demand for our products, and a proportionable augmentation of the comforts of all classes, but, in a great measure, secure ourselves against the risk of future hostilities. *Les peuples ne s'entrehaïssent jamais*; and we trust the period has now arrived when a selfish and repulsive system of policy will no longer be permitted to

'Make enemies of nations, which had else,  
Like kindred drops, been mingled into one.'

"The late glorious revolution in Spain, will not only give additional strength to the cause of freedom in this and every other country; but if we avail ourselves of the opportunity which it presents, it may also be rendered of the very greatest service to our commerce. During the period when Ferdinand was employed in the appropriate task of embroidering petticoats for the Virgin, the Cortes did every thing in their power to promote a free intercourse with this country. No sooner, however, had the Cortes been put down, and the usurper restored, than our cotton goods were strictly excluded from the peninsula; and a duty of from 26 to 43 per cent. imposed on the two finer qualities of our woollens, and of 130 per cent on the inferior qualities. This put an entire stop to the operations of the fair trader. But there is every reason to hope that the Cortes will again return to their former policy; and that a generous and liberal conduct on our part, will be sufficient to give a vastly greater extent to the commerce of Spain.

"But it is not in Europe and America only that the abandonment of the exclusive system would give fresh vigour to commerce. It has been nearly as destructive to our intercourse with the eastern nations, as to that with France and the Baltic. The disadvantages under which our commerce with China is at present carried on, have, it is said, impressed even the practical statesmen of the Board of Trade with a conviction of the necessity of making some partial relaxation in the East India Company's monopoly. But this can be of no material service. If government are really desirous that the surplus produce of this country should find a vent in the



immense market of China, it is indispensably requisite that the freest scope should be given to competition, and that exclusive privilege, granted to any particular class of traders, should be done away. It is certain, indeed, that if the monopoly is not entirely abolished, we shall very soon be deprived of the share we at present possess of the China trade. Notwithstanding every advantage derived from long acquaintance with the Indian seas, and the character and manners of the people, the drawback occasioned by the exclusive system has been so great, that the Americans, whose flag first appeared at Canton so late as 1784, have already completely stript us of all share in the *foreign tea trade*; and, but for the monopoly which the company have acquired of the home market, they would not be able to send out a single ship."

#### THE HANDSOME AND DEFORMED LEG.

There are two sorts of people in the world, who, with equal degrees of health and wealth, and the other comforts of life, become, the one happy, and the other miserable. This arises very much from the different views in which they consider things, persons and events; and the effect of those different views upon their own minds.

In whatever situation men can be placed, they may find conveniences and inconveniences; in whatever company, they may find persons and conversation more or less pleasing: at whatever table, they may meet with meats and drinks of better and worse taste, dishes better and worse dressed; in whatever climate, they will find good and bad weather; under whatever government, they may find good and bad laws, and good and bad administration of those laws; in whatever poem, or work of genius, they may see faults and beauties; in almost every face, and every person, they may discover fine features and defects, good and bad qualities.

Under these circumstances, the two sorts of people abovementioned fix their attention, those who are disposed to be happy, on the convenience of things, the pleasant parts of conversation, the well dressed dishes, the goodness of the wines, the fine weather, &c. and enjoy all with cheerfulness. Those who are to be unhappy, think and speak only of the contraries. Hence they are continually discontented themselves, and, by their remarks, sour the pleasures of society, offend personally many people, and make themselves every where disagreeable. If this turn of mind was founded in nature, such unhappy persons would be the more to be pitied. But as the disposition to criticise, and to be disgusted, is, perhaps, taken up originally by imitation, and is, unawares, grown into a habit,

which, though at present strong, may nevertheless be cured, when those who have it are convinced of its bad effects on their felicity; I hope this little admonition may be of service to them, and put them on changing a habit, which, though in the exercise it is chiefly an act of imagination, yet has serious consequences in life, as it brings on real griefs and misfortunes. For, as many are offended by, and nobody loves this sort of people, no one shows them more than the most common civility and respect, and scarcely that; and this frequently puts them out of humour, and draws them into disputes and contentions. If they aim at obtaining some advantage in rank or fortune, nobody wishes them success, or will stir a step, or speak a word, to favour their pretensions. If they incur public censure or disgrace, no one will defend or excuse, and many join to aggravate their misconduct, and render them completely odious. If these people will not change this bad habit, and condescend to be pleased with what is pleasing, without fretting themselves and others about the contraries, it is good for others to avoid an acquaintance with them; which is always disagreeable, and sometimes very inconvenient, especially when one finds oneself entangled in their quarrels.

An old philosophical friend of mine was grown, from experience, very cautious in this particular, and carefully avoided any intimacy with such people. He had, like other philosophers, a thermometer, to show him the heat of the weather, and a barometer, to mark when it was likely to prove good or bad; but there being no instrument invented to discover, at first sight, this unpleasant disposition in a person, he, for that purpose, made use of his legs; one of which was remarkably handsome, the other, by some accident, crooked and deformed. If a stranger, at the first interview, regarded his ugly leg more than his handsome one, he doubted him. If he spoke of it, and took no notice of the handsome leg, that was sufficient to determine my philosopher to have no further acquaintance with him. Every body has not this two legged instrument; but every one, with a little attention, may observe signs of that carping, fault finding disposition, and take the same resolution of avoiding the acquaintance of those infected with it. I therefore advise those critical, querulous, discontented, unhappy people, that, if they wish to be respected and beloved by others, and happy in themselves, they should *leave off looking at the ugly leg*.

FROM THE ALBANY DAILY ADVERTISER.

## TOCKOA FALLS.

Among the natural curiosities of the world, the Tockoa Falls, in Georgia, ought to hold a distinguished place; but hitherto they have been little or scarcely known, except to those who have visited them. Why those, who have taken upon them to designate and describe the wonders of the world, have passed this beautiful and astonishing fall in silence, is to us surprising; and it is more surprising why the Georgians themselves, who so frequently resort to this spot to gaze and admire, should not have given it some more particular notice.

These falls are in Habersham county, in the northeast corner of the state, about 100 miles from Augusta, and 8 or 10 southwest from the Fugalo river. This river and the Kiowee form the Savannah. You pursue the Tockoa creek westwardly in its serpentine path, a mile or two before you approach the fall. The hills on either side of the creek are high, abrupt, and the valley through which it meanders, nearly half a mile in width, is covered with large trees and a beautiful shrubbery. You move along, struck with the scenery, yet in an anxiety so breathless to seize the object of your visit, that the mind has no time to feast upon and admire the beauties that surround you. "It must be there! it must be there!" I exclaimed several times to my guide, pointing where the hills seemed to meet, as we wandered our way along the valley. When you arrive within about three hundred yards of the fall, the valley is shut up, and over the hill (there a solid rock) tumbles the stream you have been tracing, 180 feet perpendicularly! The stream is about 20 to 25 inches in depth. In falling such a distance, the water, of consequence, becomes nearly spray.

About three-fourths of a mile from the fall is the residence of colonel —, now nearly 100 years of age. He amused us some time with his library, his own writings, his small gallery of paintings, &c. &c. and then walked to show us the wonder. He yet retains the faculties of his mind in all their primary vigour.

A TRAVELLER.

At Dresden, the assassin of the painter Kugeleher, having been detected by a Jew, the latter refused the reward of a thousand crowns, because the Mosaic law forbids the taking the price of blood.

## Agriculture.



"Let us cultivate the ground, that the poor, as well as the rich, may be filled; and happiness and peace be established throughout our borders."

*Change of Seed not necessary to prevent degeneracy; Naturalization of Plants; important Caution to secure permanent good quality of Plants. By J. Cooper, of Gloucester county, New Jersey.*

[The following paper on several important agricultural subjects, has already been published in the United States, and in Europe; and has deservedly excited very general attention. The writer is entitled to every degree of respect, both for his practical knowledge, and integrity of relation. His experience and opinions differ widely from those generally received. The results produced, require the care and attention which few will give. The merit of Mr. Cooper is therefore the greater. That both sides of a question, in which agriculturists are highly interested, might fairly appear, the society have thought it right to add to their memoirs, this important development of the practice and success of the writer. And this, not with a view to promote controversy, but to encourage and invite candid inquiry.]

*Cooper's Point, April 17th, 1799.*

Respected Friend—Kind Providence having placed me in a situation of life, which obliged me to procure a living by industry, and that principally in the agricultural line, it has caused me to be a strict observer of the works of nature, with respect to such parts of the vegetable creation as have come under my particular notice, and have been greatly embarrassed at the opinion very generally entertained by farmers and gardeners, that changing seeds, roots and plants, to distant places, or different soils or climates, is beneficial to agriculture; such opinion not agreeing with my observations or practice. This induced me to make many experiments on that head, all of which, in more than forty years' practice, have operated to prove to my satisfaction, that the above opinion is not well founded, and if so, must be extremely prejudicial to agriculture, as it turns the at-



tention of the husbandman from what appears to me one great object, viz. that of selecting seeds and roots for planting or sowing from such vegetables as come to the greatest perfection, in the soil which he cultivates.

What induced me to make experiments on the subject, was, my observing that all kinds of vegetables were continually varying in their growth, quality, production, and time of maturity. This led me to believe that the great Author of nature, has so constructed that wonderful machine, if I may be allowed the expression, as to incline every kind of soil and climate to naturalize all kinds of vegetables, that it will produce at any rate, the better to suit them, if the agriculturists will do their part in selecting the most proper seed. In support of this position, I will subjoin a few facts and experiments, out of a great number, which have all combined to prove the above to my satisfaction.

In or about the year 1746, my father procured the seeds of the long warty squash, which have been kept on the farm ever since, without changing, and are now far preferable to what they were at first. Our early peas were procured from London, the spring before Braddock's defeat (1756) and have been planted successively every season since, on the same place. They have not been changed, and are now preferable to what they were when first obtained. The seed of our asparagus was procured from New York, in the year 1752, and since that time, I have not planted a seed, except what grew on my beds; and by selecting the seed, from the largest stalks, I have improved it greatly.

A complaint is very general, that potatoes of every kind degenerate, at which I am not surprised, when the most proper means to produce that effect is constantly practised; to wit, using or selling the best, and planting the refuse; by which means, almost the whole of those planted are the produce of plants the most degenerated. This consideration induced me to try an opposite method. Having often observed that some plants or vines produced potatoes larger, better shaped, and in greater abundance than others, without any apparent reason, except the operation of nature, it induced me to save a quantity from such only, for planting the ensuing season, and I was highly gratified in finding their production exceed that of the others, of the same kind, planted at the same time, and with every equal advantage, beyond my expectation, in size, shape, and quantity; by

continuing the practice, I am satisfied that I have been fully compensated, for all the additional trouble.

A circumstance happened respecting potatoes, which may be worth relating: a woman whom I met in market, requested me to bring half a bushel of sweet potatoes for seed, the next market day, which I promised to do; but going through the market on that day, previous to her son's coming for the potatoes, I observed the woman selling such as I had brought for her; when the boy came, I asked him the reason they wanted potatoes for seed, while they were selling their own; his answer was, that his father said, if they did not get seed from me, once in three or four years, their potatoes would be good for nothing. Query, if he had used the same means in selecting his potatoes for planting, as I did, whether he would have profited by changing with one who used the other method?

In discoursing with a friend who lived at a great distance from me, on the above subject, he mentioned a fact in favour of changing seed. Some radish seed which he had from me, produced radishes preferable to any thing of the kind ever seen in that neighbourhood, which was near 100 miles distant: but in two or three years the radishes degenerated, so as to be no better than what he had before; I asked his method of saving his seed; he said he had no other radishes in his garden, and when they had pulled what was fit for use, let the others go to seed. I then told him my method, viz. As soon as the radishes are fit for use, I dig up ten or twelve of those which please me best, as to colour, shape, &c. and plant them at least 100 yards from where any others bloom at the time they do; this, I informed him, was the best method I knew of to improve any kind of vegetables, varying the process agreeably to their nature; I asked him if he thought I should be benefited by exchanging with him? his answer was, he believed I was the best gardener.

In or about the year 1772, a friend sent me a few grains of a small kind of Indian corn, the grains of which were not larger than goose shot; he informed me by a note that they were originally from Guinea, and produced from 8 to 10 ears on a stock. Those grains I planted, and found the production to answer the description, but the ears were small, and few of them ripened before frost. I saved some of the largest and earliest, and planted them between rows of the larger and earlier kinds of corn, which produced a mixture to advantage; then I saved seed from stocks that produced the great-



est number of the largest ears, and first ripe, which I planted the ensuing season, and was not a little gratified to find its production preferable, both in quantity and quality, to that of any corn I had ever planted. This kind of corn I have continued to plant ever since, selecting that designed for seed, in the manner I would wish others to try, viz.—When the first ears are ripe enough for seed, gather a sufficient quantity for early corn, or for replanting, and at the time you wish your corn to ripen generally, gather a sufficient quantity for planting the next year, having particular care to take it from stalks, that are large at bottom, of a regular taper, not over tall, the ears set low, and containing the greatest number of good sizeable ears, of the best quality; let it dry speedily, and from this corn, plant your main crop, and if any hills should miss, replant from that first gathered, which will cause the crop to ripen more regularly than is common: this is a great benefit.

The above method I have practised many years, and am satisfied it has increased the quantity, and improved the quality of my crops, beyond the expectation of any person who had not tried the experiment. The distance of planting corn, and the number of grains in a hill, are matters many differ in; perhaps different soils may require a difference in both these respects; but in every kind of soil I have tried, I find planting the rows six feet asunder each way, as nearly at right angles as may be, and leaving not more than four stocks on a hill, produces the best crop. The common method of saving seed corn, by taking the ears from the crib or heap, is attended with two disadvantages, one is, the taking the largest ears, which have generally grown but one on a stock. This lessens the production; the other is, taking ears which have ripened at different times, which causes the production to do the same.

A striking instance of plants being naturalized, happened by colonel Matlack sending some water melon seed from Georgia, which, he informed me by letter, were of superior quality: knowing that seed from vegetables, which had grown in more southern climates, required a longer summer than what grew here, I gave them the most favourable situation, and used glasses to bring them forward, yet very few ripened to perfection; but finding them to be as excellent in quality as described, I saved seed from those first ripe; and by continuing that practice four or five years, they became as early water melons as I ever had.

Many admit the importance of a change of seed, from the fact of foreign flax seed producing the best flax in Ireland; but when it is considered that it is the bark of the stock only that is used in Ireland, and that this is in the best perfection before the seed ripens, the argument fails when applied to other vegetables.

For many years past, I have renewed the whole seed of my winter grain, from a single plant which I have observed to be more productive, and of better quality than the rest; a practice, which I am satisfied, has been of great use; and I am fully of opinion, that all kinds of garden vegetables may be improved by the foregoing methods, particular care being taken, that different kinds of the same species of vegetables are not in bloom at the same time, near together, as by this bad practice, they mix and degenerate.\*

I am sensible the foregoing will meet with great opposition and contradiction, but as an experiment is safe and easy, I hope it will induce persons of more leisure, ability, and observation than myself, to make trial, as a mean of improving the agriculture of our country. Such is the sincere wish of thy friend,

JOSEPH COOPER.

\* The above remark of an observant, practical agriculturist, has so often been confirmed by the observations of others, that no doubt can be entertained of its accuracy. The fact is one of the most powerful proofs of the sexual doctrines of plants, and is strongly confirmed by the familiar example of the certain degeneracy of squashes and pumpkins if grown near gourds; the latter even communicate an emetic quality to their neighbours. In like manner, melons will degenerate if planted near squashes or pumpkins. A case is recorded in the law reports, of an action which was brought against a gardener near London, in the reign of Charles II. for selling cabbage seed instead of cauliflower seed. On trial it appeared, that both had been planted near each other, by the purchaser, and to this error, the gardener contended the degeneracy of the true seed which he had sold, was owing. But he lost his cause in consequence of the prevailing ignorance of the sexual doctrine of plants: posterity however has rescued his memory from the imputation of a cheat. The fact quoted by Mr. William Young in page 53, may be adduced as another argument in favour of the propriety of attending to the caution of Mr. Cooper.

This fact, and the consequences of it, show that lawyers should attend to agricultural and horticultural knowledge, as well as to mere professional acquirements. In an agricultural country, it is peculiarly incumbent on them: both for the purposes of justice, and their personal advantage.—*Memoirs, vol. i.*

☞ The office of this paper is, for the present, removed to No. 54, South Fourth street.